MA 35Q(85)-1

CURRENT INDUSTRIAL REPORTS

Antifriction Bearings

1985

U.S. Department of Commerce
BUREAU OF THE CENSUS

MA35Q(85)-1
Issued August 1986

SUMMARY OF FINDINGS

The value of shipments of complete antifriction bearings and components, including balls and rollers, was $3,509.2 million in 1985, an decrease of one percent from shipments of $3,534.9 million in 1984. The 1985 total includes complete ball bearings, $1,363 million, a decrease of one percent under the 1984 value of shipments; complete tapered roller bearings and roller bearing parts (except rollers), $734 million, a decrease of 5 percent; other complete roller bearings, $706 million, an increase of 4 percent; mounted bearings (except plain), $303 million, an increase of 2 percent; and parts and components for ball and roller bearings, sold separately, $402 million, a decrease of one percent.

A description of the survey methodology and related information appears on page 6.

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Table 1A. VALUE OF SHIPMENTS FOR COMPLETE ANTIFRICTION BEARINGS AND COMPONENTS, INCLUDING BALLS AND ROLLERS, BY PRODUCT CLASS: 1975 TO 1985

(Millions of dollars)

Product code	Product description	1985	1984	1983	1982	1981	1980	1979	1978	1977[1]	1976[2]	1975[2]
3562- --	Ball and roller bearings	3,509.2	3,534.9	2,956.0	2,891.2	3,582.6	3,261.7	3,237.8	2,779.8	2,444.5	2,195.2	2,046.3
35621	Ball bearings, complete	1,363.4	1,375.8	1,107.2	1,071.0	1,274.3	1,179.4	1,075.5	910.1	749.9	654.6	645.9
35622	Tapered roller bearings, cups and cones	734.2	776.5	692.0	695.4	968.5	913.7	989.6	842.7	748.6	684.3	625.7
35623	Roller bearings, complete	706.3	679.5	586.5	594.9	713.6	602.6	586.7	510.8	472.9	426.7	375.0
35624	Mounted bearings, except plain	303.0	295.9	245.2	239.9	280.0	258.8	256.1	223.8	213.1	200.3	188.1
35629	Parts and components for ball and roller bearings, including balls and rollers sold separately	402.2	407.1	325.1	290.1	346.2	307.2	329.9	292.4	243.1	212.4	207.7
35620	Ball and rollers n.s.k.	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	16.8	16.9	3.9

N.s.k. Not specified by kind. (X) Not applicable.

[1]Source: 1977 Census of Manufactures.
[2]Source: 1975 and 1976 Annual Surveys of Manufactures.

READEX FICHE best copy available

Address inquiries concerning these figures to U.S. Department of Commerce, Bureau of the Census, Industry Division, Washington, D.C. 20233, or call Odelle S. Thomas, (301) 763-2824.

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Table 1B. QUANTITY AND VALUE OF SHIPMENTS OF ANTIFRICTION BALL AND ROLLER BEARINGS, COMPONENTS, AND PARTS: 1985 AND 1984

(Quantity in thousands of units; value in thousands of dollars)

Product code	Product description	Number of companies	1985		1984	
			Quantity	Value	Quantity	Value
3562- --	Antifriction bearings and components	86	(X)	3,509,178	(X)	3,534,913
35621 --	Ball bearings, complete	53	406,249	1,363,440	443,474	1,375,844
	Annular, including self-aligning:					
	Ground or precision:					
	Single row conrad:					
	Miniature (below 9 mm. O.D.):					
35621 01	Regular (ABEC 1 and 3)	5	2,061	2,067	(D)	(D)
35621 02	Precision (ABEC 5 and up)	8	2,530	9,024	3,171	10,453
	Other regular (ABEC 1 and 3):					
35621 03	9 mm. O.D. through 30 mm. O.D	17	46,114	58,903	51,124	70,787
35621 04	Over 30 mm. O.D. through 52 mm. O.D	20	67,861	104,267	72,916	113,857
35621 05	Over 52 mm. O.D. through 100 mm. O.D	19	18,597	106,655	23,505	132,272
35621 07	Over 100 mm. O.D	19	2,833	97,618	3,464	112,584
	Other precision (ABEC 5 and up):					
35621 09	9 mm. O.D. through 30 mm. O.D	7	5,096	27,718	6,755	27,011
35621 11	Over 30 mm. O.D. through 52 mm. O.D	8	450	21,842	508	22,417
35621 12	Over 52 mm. O.D. through 100 mm. O.D	8	336	28,872	356	28,783
35621 13	Over 100 mm. O.D	9	102	40,091	r121	44,655
35621 14	Single row maximum capacity type	5	2,146	23,709	2,824	31,162
	Integral shaft and integral spindle ball bearings:					
35621 15	Not over 30 mm. O.D	4	5,412	11,268	6,079	12,522
35621 17	Over 30 mm. O.D	5	(D)	(D)	(D)	(D)
35621 16	Double row	11	8,729	65,153	9,860	76,475
35621 18	Angular contact	11	6,953	68,956	5,138	78,436
35621 21	All other ground or precision bearings (ABEC 1 and up)	6	(D)	(D)	(D)	(D)
35621 23	Ground bearings of less than ABEC 1 precision	5	(D)	(D)	9,536	26,237
35621 25	Unground, including self-aligning (less than ABEC 1)	14	145,100	73,378	163,183	75,497
	Thrust ball bearings:					
35621 33	Ground	14	10,506	40,239	9,561	36,860
35621 35	Unground	5	2,349	5,879	r2,555	r5,811
35621 51	Other ball bearings	12	38,672	74,478	39,964	73,154
35622 --	Tapered roller bearings	11	[1]215,003	[1]734,237	[1]244,395	[1]776,535
35622 32	Cup and cone assemblies shipped as a set	10	11,629	138,549	15,032	r145,848
35622 33	Cups shipped separately	9	[a]100,047	188,546	114,412	r222,076
35622 34	Cone assemblies shipped separately	9	[a]103,327	407,142	114,951	408,611
35629 35	Other parts, except rollers	4	(X)	([2])	(X)	([2])
35623 --	Cylindrical, spherical, needle, and other roller bearings	36	519,651	706,299	453,200	679,534
	Cylindrical roller bearings:					
35623 11	Regular (ABEC 1 and 3)	22	23,573	140,921	26,685	153,856
35623 12	Precision (ABEC 5 and up)	9	219	77,939	215	71,415
	Spherical roller bearings, including hourglass and barrel:					
35623 24	Single row	7	416	15,485	470	14,935
35623 25	Double row	6	693	109,930	678	103,206
35623 41	Needle roller bearings	10	476,660	303,933	408,960	286,560
35623 93	Other roller bearings not specified above	14	18,090	58,091	16,192	49,562
35624 --	Mounted bearings, except plain	16	14,002	302,998	12,459	295,886
35624 17	Ball bearings, unit and/or split mounted	13	12,828	168,695	11,265	164,939
	Roller:					
35624 53	Unit mounted	5	1,008	108,627	1,030	111,200
35624 55	Split mounted	5	166	25,676	164	19,747
35629 --	Parts and components for ball and roller bearings, including balls and rollers sold separately	47	(X)	402,204	(X)	r407,114
35629 11	Balls:					
	Shipments	13	14,779,728	103,218	r14,991,982	r104,220
	Production for all purposes	13	15,355,718	(X)	r15,579,558	(X)
35629 21	Other antifriction ball and bearing components and parts, including unassembled ball bearings, cages, housing closures, races, etc	17	(X)	22,389	(X)	23,706
35629 31	Rollers:					
	Shipments	14	7,150,710	59,176	7,469,906	56,883
	Production for all purposes	14	9,225,385	(X)	9,310,775	(X)
35629 41	Other antifriction roller bearings, components, and parts, including unassembled roller bearings, cages, housing closures, collars, races, etc	16	(X)	[2]217,421	(X)	[2]222,305

Note: The percent of estimation of each item is indicated as follows (see "Description of Survey" for a discussion of estimation of missing reports): [a]15 to 25 percent of this item is estimated.

(D) Data withheld to avoid disclosing figures for individual companies.

(X) Not applicable.

[r]Revised by 5 percent or more from previously published figures.

[1]Value excludes other parts (except rollers) of tapered roller bearings, product code 35629 35, also see footnote 2.

[2]The value for product code 35629 35 has been combined with product code 35629 41 to avoid disclosing the operations of individual companies.

Table 2. COMPARISON OF VALUES OF SHIPMENTS OF COMPLETE ANTIFRICTION BEARINGS AND COMPONENTS, INCLUDING BALL AND ROLLERS, AS REPORTED IN THE MA35Q, THE 1984 ANNUAL SURVEY OF MANUFACTURES, AND THE 1982 CENSUS OF MANUFACTURES

(Value in thousands of dollars)

Product code	Product description	1984			1982	
			Annual Survey of Manufactures			
		MA35Q	Value	Standard error of estimates[1]	MA35Q	Census of Manufactures
3562-	Ball and roller bearings	(X)	3,697.5	2	(X)	2,973.1
35621	Ball bearings, complete	1,375.8	1,356.3	3	1,071.0	1,087.1
35622	Tapered roller bearings, complete[2] [3]	776.5	882.0	1	695.4	710.9
35623	Other roller bearings, complete	679.5	691.8	1	594.9	614.1
35624	Mounted bearings, except plain	295.9	321.7	8	239.9	241.7
35629	Parts and components for ball and roller bearings, including balls and rollers, sold separately[3]	407.1	421.4	6	290.1	298.4
35620 00	Ball and roller bearings n.s.k., typically for establishments with 5 employees or more (see note)	(X)	24.3	23	(X)	4.8
35620 02	Ball and roller bearings n.s.k., typically for establishments with 5 employees or less (see note)					16.1

Note: In the 1982 Census of Manufactures, shipments data for establishments of small single-unit companies with up to five employees were estimated from administrative records data rather than data actually collected from respondents. Employment cutoff used for administrative records were developed for each industry, and shipments figures are included in code ending with "002." In the 1982 Census of Manufactures, products not completely identified on a standard form were coded in appropriate product class (five-digits) followed by "00" or, in some cases, to appropriate product group code (four-digits) followed by "000."

N.s.k. Not specified by kind. (X) Not applicable.

[1] The annual survey of manufactures percentage standard errors shown are the approximate relative errors of the estimates of level. A more detailed description of the standard error of estimate is given in the introduction of the annual survey of manufactures, Value of Product Shipments, MB4(AS)-2, under "Qualifications of the Data."

[2] Includes the value of finished cups and cone assemblies shipped separately.

[3] Value of shipments of parts of tapered roller bearings is included in product class 35629.

Table 3. SHIPMENTS, EXPORTS, IMPORTS, AND APPARENT CONSUMPTION OF ANTIFRICTION BEARINGS AND COMPONENTS, INCLUDING BALLS AND ROLLERS: 1985 AND 1984

(Quantity in thousands of units, value and duty in thousands of dollars)

Product description	Manufacturers' shipments		Exports of domestic merchandise[1]			Percent exports to manufacturers' shipments		Imports for consumption[1,4]		Apparent consumption[5] (value)	Percent imports to apparent consumption (value)
	Quantity	Value f.o.b. plant	Quantity	Value at port[2]	Estimated producers' value[3]	Quantity	Value	Quantity	C.i.f. and calculated duty		
1985											
Radial ball bearings	334,722	1,242,844	4,516	42,143	37,516	(X)	3	256,201	278,870	1,498,405	19
Integral shaft and spindle ball bearings			[6]974	4,192	3,732			69,819	17,939	[7]154,330	[8]35
Other ball bearings	51,527	120,596	6,165	23,508	20,927	12	17	31,269	54,661		
Tapered roller bearings:											
Cup and cone assemblies	11,629	138,549						11,145	32,730		
Cups (separate)	100,047	188,546	(NA)	115,019	102,390	(NA)	(NA)	49,200	45,841	(NA)	(NA)
Cone assemblies (separate)	103,327	407,142						47,725	81,813		
Other parts (except rollers)	(X)	(D)						1,879	4,760		
Spherical roller bearings	1,109	125,415	[6]1,074	9,635	8,577	(X)	7	[6]2,193	32,554	149,392	22
Other roller bearings and parts	518,542	580,884	[6]14,071	73,281	65,235	(X)	11	[6]22,820	108,398	624,047	17
Mounted bearings:											
Ball	12,828	168,695	1,123	15,484	13,784	9	8	(NA)	(NA)	(NA)	(NA)
Roller	1,174	134,303	127	7,095	6,316	11	5				
Parts for ball and roller bearings:											
Balls	14,779,728	103,218	[6]1,986	5,722	5,094	(X)	3	[6]6,890	13,076	111,200	12
Rollers	7,150,710	59,176	[6]866	2,998	2,669	(X)	5	[6]3,910	11,039	67,546	16
Other ball bearing parts	(NA)	(D)	[6]2,321	5,764	5,131	(X)	(NA)	[6]84,049	34,607	(NA)	(NA)
1984											
Radial ball bearings	391,394	1,260,019	5,662	47,447	42,237	(X)	4	250,930	279,798	1,509,564	20
Integral shaft and spindle ball bearings			[6]907	4,068	3,621			[6]7,510	15,605	[7]128,137	[8]30
Other ball bearings	52,080	115,825	7,301	29,186	25,981	14	22	19,420	38,293		
Tapered roller bearings:											
Cup and cone assemblies	15,032	145,848						11,626	36,587		
Cups (separate)	114,412	222,076	(NA)	134,396	119,639	(NA)	(NA)	60,238	50,079	(NA)	(NA)
Cone assemblies (separate)	114,951	408,611						57,609	88,568		
Other parts (except rollers)	(X)	(D)						986	3,320		
Spherical roller bearings	1,148	118,141	[6]924	10,018	8,918	(X)	8	[6]2,515	31,161	140,384	22
Other roller bearings and parts	452,052	561,393	[6]10,036	67,422	60,019	(X)	11	[6]20,750	95,758	597,132	16
Mounted bearings:											
Ball	11,265	164,939	1,040	15,213	13,543	9	8	(NA)	(NA)	(NA)	(NA)
Roller	1,194	130,947	121	7,985	7,108	10	5				
Parts for ball and roller bearings:											
Balls	14,991,982	104,220	[6]1,890	5,430	4,834	(X)	5	[6]5,352	9,896	109,282	9
Rollers	7,469,906	56,883	[6]6537	3,532	3,144	(X)	6	[6]3,095	10,869	64,608	17
Other ball bearing parts	(NA)	(D)	[6]5,025	5,877	5,232	(X)	(NA)	[6]83,333	29,169	(NA)	(NA)

(D) Data withheld to avoid disclosing figures for individual companies. (NA) Not available. (X) Not applicable.

[1]For comparison of SIC-based product codes with Schedule B export numbers and TSUSA import numbers, see table 4.

[2]Source: Bureau of Census report EM 546, U.S. Exports.

[3]These values were derived by use of adjustment factors to exclude freight, insurance, and other charges incurred in moving goods to the port of export. This adjustment is made to convert the values to an approximation of the producers' value of exported goods. Current adjustment factors are based on data for 1981 which are published in Origin of Exports of Manufactured Establishments, M81(AS)-5, appendix B. The adjustment factor for this report is 0.8902.

[4]Source: Bureau of Census reports IM 145-X, U.S. Imports for Consumption and General Imports, and IM-146, U.S. Imports for Consumption.

[5]Apparent consumption is derived by subtracting exports from the total of manufacturers' shipments plus imports.

[6]Data represent thousands of pounds.

[7]The associated apparent consumption quantity is 64,199 thousands of units for 1984 and 76,631 thousands of units for 1985.

[8]The associated percent of imports to quantity of apparent consumption is 25 percent for 1984 and 48 percent for 1985.

Table 4. COMPARISON OF STANDARD INDUSTRIAL CLASSIFICATION-BASED PRODUCT CODES, SCHEDULE B EXPORT NUMBERS, AND TSUSA IMPORT NUMBERS: 1985

Product code	Product description	Export number[1]	Product description	Import number[2]	Product description
	Ball bearings, complete:				Ball or roller bearings, including such bearings with integral shafts, and parts thereof:
	Annular, including self aligning:				Other:
	Ground or precision:				Ball bearings, and parts thereof:
	Single row conrad:				Radial ball bearings, having an outside
	Miniature (below 9 mm. O.D.):				diameter of:
35621 01	Regular (ABEC 1 and 3):				
35621 02	Precision (ABEC 1 and 3):			680.3704	Under 9 mm.
	Other regular (ABEC 1 and 3):		Ball or roller bearings, including such bearings		
35621 03	9 mm. O.D. through 30 mm. O.D.		with integral shafts and parts thereof:	680.3708	9 mm. through 30 mm.
35621 04	Over 30 mm. O.D. through 52 mm. O.D.		Ball bearings (unmounted) and parts thereof:		
35621 05	Over 52 mm. O.D. through 100 mm. O.D.		Radial ball bearings, having an outside	680.3712	Over 30 mm. through 52 mm.
35621 07	Over 100 mm. O.D.		diameter of:		
	Other precision (ABEC 5 and up):	680.3581	Under 9 mm.	680.3717	Over 52 mm. through 100 mm.
35621 09	9 mm. O.D. through 30 mm. O.D.	680.3582	9 mm. through 30 mm.		
35621 11	Over 30 mm. O.D. through 52 mm. O.D.	680.3583	Over 30 mm. through 52 mm.	680.3718	Over 100 mm.
35621 12	Over 52 mm. O.D. through 100 mm. O.D.	680.3584	Over 52 mm. through 100		
35621 13	Over 100 mm. O.D.	680.3585	Over 100 mm.		
35621 14	Single row maximum capacity type				(Canadian article and original motor-vehicle equipment)
35621 16	Double row				Ball bearings and parts:
35621 18	Angular contact				
35621 21	All other ground or precision bearings (ABEC 1 and up)			680.3820	Ball bearings
35621 23	Ground bearings of less than ABEC 1 precision				
35621 25	Unground, including self-aligning (less than ABEC 1)				
	Integral shaft ball bearings:				
	Not over 30 mm. O.D.			680.3300	Ball bearings with integral shafts
35621 17	Over 30 mm. O.D.	680.3300	Ball bearings with integral shafts	680.3400	(Canadian article and original motor-vehicle equipment)
	Thrust ball bearings:				
35621 33	Ground				Other:
35621 35	Unground	680.3586	Other ball bearings		
35621 51	Other ball bearings			680.3722	Ball bearings other than radial
			Roller bearings (unmounted), including combination roller and ball bearings and parts thereof:		Roller bearings (including combinations roller and ball bearings) and parts thereof:
	Tapered roller bearings				Tapered roller bearings and parts:
35622 32	Cup and cone assemblies shipped as a set	680.3593	Tapered roller bearings and parts thereof	680.3932	Cup and cone assemblies imported as a set
				680.4140	(Canadian article and original motor vehicle equipment)
36522 33	Cups shipped separately			680.3934	Cups imported separately
				680.4144	(Canadian article and original motor vehicle equipment)
36522 34	Cones assemblies shipped separately			680.3938	Cone assemblies imported separately
				680.4148	(Canadian article and original motor vehicle equipment)
35629 35	Other parts, except rollers[3]			680.3940	Other parts
				680.4152	(Canadian article and original motor vehicle equipment)
	Other roller bearings:				
	Spherical roller bearings, including hourglass and barrel:	680.3596	Spherical roller bearings	680.3952	Spherical roller bearings
35623 24	Single row	680.3597	Parts of spherical roller bearings	680.3956	Parts for spherical roller bearings
35623 25	Double row				
	Cylindrical roller bearings				
35623 11	Regular (ABEC 1 and 3)				
35623 12	Precision (ABEC 5 and up)				
35623 41	Needle roller bearings	680.3598	Other roller bearings (including combination roller and ball bearings) and parts thereof	680.3960	Other roller bearings (including combination roller and ball bearings and parts)
35623 93	All other roller bearings not listed above		Mounted ball and roller bearings, including		
	Parts and components for ball and roller bearings:		pillow blocks:	680.4170	(Canadian article and original motor vehicle equipment)
35629 41	Other antifriction roller bearings, components and parts, including unassembled roller bearings, cages, housing closures, collars, races, etc.	680.3730	Parts of mounted ball and roller bearings except those described in 680.30 through 680.35		
	Mounted bearings, except plain	680.3710	Mounted ball bearings		
35624 17	Ball bearings, unit and/or split mounted				
	Roller:				
35624 53	Unit mounted				
35624 55	Split mounted	680.3720	Mounted roller bearings		
	Parts and components for ball and roller bearings sold separately:		Antifriction balls and rollers:		Antifriction balls and rollers:
					Balls
35629 11	Balls	680.3026	Balls	680.3025	Alloy steel
				680.3030	Other
35629 31	Rollers	680.3040	Rollers	680.3040	Rollers
				680.3100	(Canadian article and original motor vehicle equipment)
					Ball or roller bearings, etc.
					Other:
					Ball bearings and parts thereof:
					Parts of ball bearings (including parts of articles provided for in item 680.33):
35629 21	Other antifraction ball bearing components and parts, including unassembled ball bearings, cages, housing, closures, collars, races, etc.	680.3588	Ball or roller bearings, etc. Ball bearings (unmounted) and parts thereof: Parts of ball bearings	680.3727	Inner races and outer races (including inner and outer races of integral shaft bearings)
				680.3728	Other parts
					(Canadian article and original motor vehicle equipment)
				680.3830	Parts of ball bearings.

[1] Source: 1985 edition Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.
[2] Source: Tariff Schedules of the United States Annotated (1985).
[3] See table 2, footnote 3.

DESCRIPTION OF SURVEY

Scope of Survey. This survey covers companies engaged in the manufacture of complete anitfriction bearings and components, including balls and rollers, in the United States.

Survey Methodology. The statistics in this publication were collected by mail on Bureau of the Census annual Form MA35Q, Antifriction Bearings. The survey panel includes all known manufacturers of complete antifriction bearings and components, approximately 86 companies.

Reliability of Data. Survey error may result from several sources: (1) inability to obtain information about all cases in the survey; (2) response errors; (3) definitional difficulties; (4) differences in the interpretation of questions; (5) mistakes in recording or coding the data obtained; and (6) other errors of collection, response, coverage, and estimation for missing data. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is due to imputing data for nonrespondents, for late reporters, and for data which fail logic edits. Missing figures are imputed based on yearly movements shown by reporting firms. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are footnoted.

The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is not precisely known but is assumed to be small. The degree of uncertainty regarding the accuracy of the published data, however, increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

Revisions to Previous Period Data. Statistics for previous years may be revised as the result of corrected data from respondents, late reports for which imputations were made as described above, or other corrections. Figures which have been revised by more than 5 percent from previously published figures are indicated by footnotes.

Revisions include changes to prior period data resulting from reconciliation of the results of this survey with the 1984 Annual Survey of Manufactures to correct differences in reported data between the two series and to identify and verify new establishments included in the scope of this survey. Table 2 presents a comparison of data from the two series by census product class following the reconciliation.

Adjustment for Price Change. All dollar figures included in this publication are in current dollars; i.e., they have not been adjusted for price change.

EXPLANATION OF TERMS

Quantity and Value of Shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable sales to unaffiliated customers; i.e., the value includes an appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Annular Bar Bearing. An antifriction bearing primarily designed to support load perpendicular to shaft axis. Classifications are based on standards of the annular bearing engineers committee (ABEC).

Antifriction Bearing. A bearing using rolling elements.

Ball. A spherical rolling element.

Ball Bearing. An antifriction bearing using balls as rolling element.

Ball Bearing, Angular Contact, A type of ball bearing whose internal clearances and ball race locations are such as to result in a definite contact angle and predetermined relationship of inner to outer ring facts.

Ball Bearing, Double Row. A unitary bearing with two rows of rolling elements.

Ball Bearing, Miniature. Ball bearings with outside diameter dimensions below and not including $^{3}8$ inch or 9mm.

Ball Bearings, Single Row. A ball bearing having only one row of rolling elements.

Bearing Closure. The element of the journal bearing assembly that supports the bearing lining.

Bearing Housing. A structure supporting the actual bearing liner or ball or roller bearing in a bearing assembly.

Cage (Retainer, Separator). A device which partly surrounds the rolling elements and travels with them, the main purpose of which is to space the rolling elements in proper relationship to each other.

Cone. A tapered rolling bearing inner ring.

Cup. A tapered roller bearing outer ring.

Raceway. Grooves cut into ring surface which guide the balls.

Radial-Type Bearing. An antifriction bearing primarily designed to support load perpendicular to shaft axis.

Roller. Load carrying rolling element.

Roller Assembly. Rollers and cage.

Roller Bearing, Cylindrical. Axis of rollers parallel to bearing

Spherical Seated Bearing (Self-Aligning Bearing). A journal bearing in which the bearing liner is supported in such a manner as to permit the axis of the journal to be moved through an appreciable angle in any direction.

Split Mounted Ball Bearing. A ball bearing having either or both rings split across the raceway so as to facilitate assembly in certain applications.

Split-Sleeve Bearing. A journal bearing having a bearing sleeve that is split for assembly.

Tapered Roller Bearing. A roller bearing with tapered rollers.

Thrust Bearing. A ball or roller bearing with space between races oriented perpendicular to the axis or rotation. It is primarily intended to carry thrust loads.

Unground Ball or Roller Bearing. An antifriction bearing with unground raceways.

COMPARISON OF EXPORT, IMPORT, AND DOMESTIC OUTPUT DATA

The Standard Industrial Classification (SIC) system used for domestic output and the statistical export and import commodity classifications were developed independently. This results in considerable difficulty in comparing the three types of data for many commodity areas. The domestic output classification is based on type of industry; on the other hand, the export and import classification system is more materials oriented. Also, there are a substantial number of imported commodities which have no comparable domestic output classification. The relationships shown in this report should be considered only as approximations, since, in addition to the problems mentioned above, there are also the following problems affecting the comparability of the three sets of data.

Valuation. There are different methods of valuation for the three types of data:

- *Domestic Output*—Valued at the point of production. It includes the net sales price, f.o.b. plant, after discounts and allowances, exclusive of freight charges and excise taxes.
- *Exports*—Valued at the point of exportation. It includes the selling price, or cost if not sold, and inland freight, insurance and other charges to the export point.

  Estimated producers' values of exports have also been developed. These values more closely approximate the values reported for domestic output because they exclude freight, insurance, and other charges applied from the producing plant to the export point.
- *Imports*—Valued at the first port of entry in the United States. It includes c.i.f. (cost, insurance, and freight), duty, and other charges to the import point.

Duplication in Quantity and Value of Output. Because producers' shipments of some commodities may be used as materials for incorporation into other commodities, combinations of data for such commodities may contain a certain amount of duplication. Thus, percentages of exports to output or imports to apparent consumption (output plus imports minus exports) at four-digit or broader levels may be understated. Where duplication is known to be substantial, the output data are appropriately noted in the table.

Low-Value Import and Export Transactions. Detailed commodity information is not included for individual export shipments valued at not more than $1,000. Generally, detailed commodity information is not included for individual import shipments valued at not more than $1,000. For textiles and textile products, gloves, footwear, and miscellaneous rubber and plastics products, detailed commodity information is not included for individual import shipments valued at not more than $250. This is believed to have only negligible effects on the statistics for the bulk of the commodities.

Manufacturers' Shipments, Not Specified by Kind. The value of manufacturers' shipments at the four-digit industry level often includes a small amount which is not distributed among the individual five-digit product classes. Export and import percentages at the more detailed levels might, therefore, be slightly overstated.

Time Lag Between Output and Exports. There will be a lag between the time a commodity is produced or shipped by the producer and the time it is actually exported, especially when intermediaries (wholesalers, exporters, etc.) are involved. Ordinarily, this type of discrepancy is insignificant in annual figures.

"Direct" vs "Total" Commodity Exports and Imports. Export and import data do not include materials which are incorporated into other more finished products and exported or imported in finished form. Thus, by showing only direct exports and imports, the relation of exports to output and imports to apparent consumption for intermediate products is considerably understated.

Used Commodities. With a few exceptions, used or rebuilt commodities are classified in the same import or export codes as is new merchandise. Percentages are thus overstated to the extent that used or rebuilt products are significant in trade.

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Geographic Area of Coverage. Import and export data reflect the movement of merchandise into and out of U.S. foreign trade zones, the U.S. Virgin Islands, and the U.S. customs territory (includes the 50 States, the District of Columbia, and Puerto Rico).

HISTORICAL NOTE

Data on antifriction bearings have been collected by the Bureau of the Census since 1972. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. A list of depository libraries may be obtained from the Bureau of the Census regional offices cited below:

Office	Telephone
Atlanta, Georgia	(404) 881-2271
Boston, Massachusetts	(617) 223-2327
Charlotte, North Carolina	(704) 371-6142
Chicago, Illinois	(312) 353-6251
Dallas, Texas	(214) 767-0621
Denver, Colorado	(303) 234-3924
Detroit, Michigan	(313) 226-7742
Kansas City, Kansas	(816) 374-4601
Los Angeles, California	(213) 209-6616
New York, New York	(212) 264-3860
Philadelphia, Pennsylvania	(215) 597-4920
Seattle, Washington	(206) 442-7828

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Series	Frequency	Title
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Foreign Trade Reports		
FT410	Monthly	*U.S. Exports—Schedule E—Commodity by Country*
FT135	Monthly	*U.S. General Imports-Schedule A—Commodity by Country*
EM546	Monthly	*U.S. Exports*
IM146	Monthly	*U.S. Imports for Consumption*
IA245X	Annually	*U.S. Imports for Consumption and General Imports*

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone Number
Current Industrial Reports MA35Q	Odelle S. Thomas	(301) 763-2824
Classification Systems Comparability	James Kristoff (ESD)	(301) 763-1935
Foreign Trade publications	Paul E. Herrick	(301) 763-5200
Census/ASM	Ted McGrath	(301) 763-5752
To order a Census Bureau publication	Customer Services (DUSD)	(301) 763-4100
International Trade Administration	William Fletcher	(202) 377-0309

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